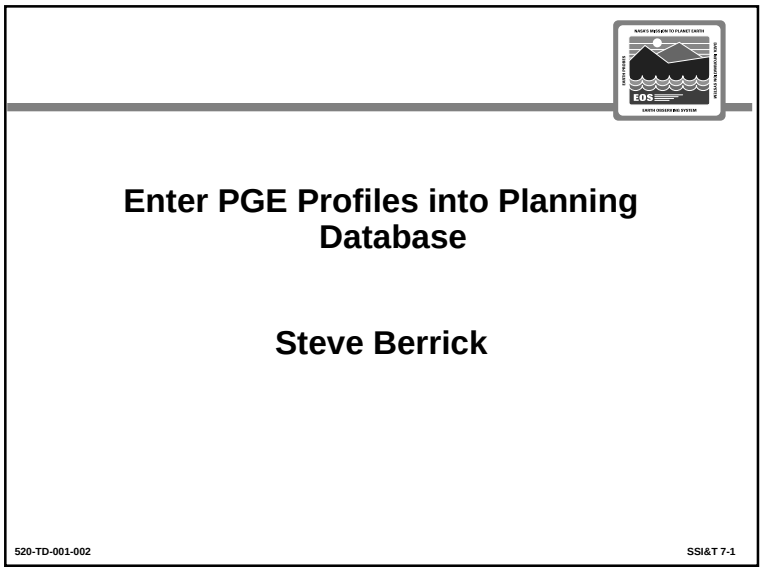
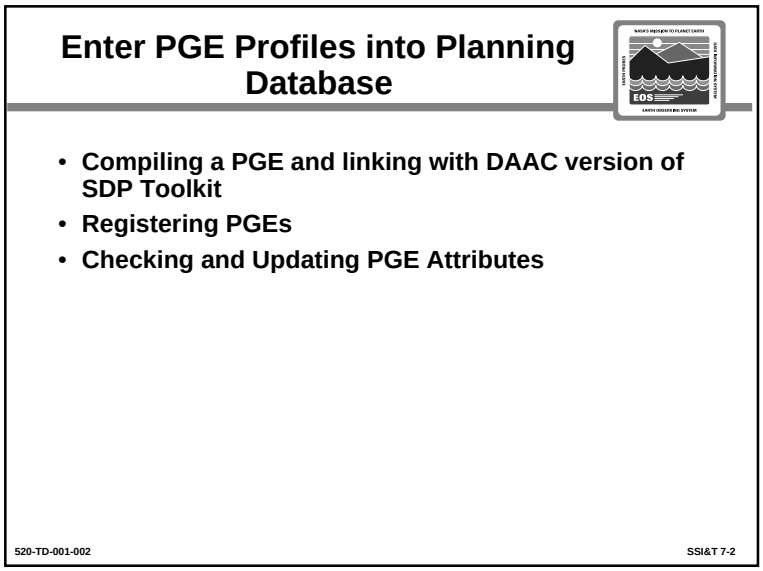


Discussion Topics



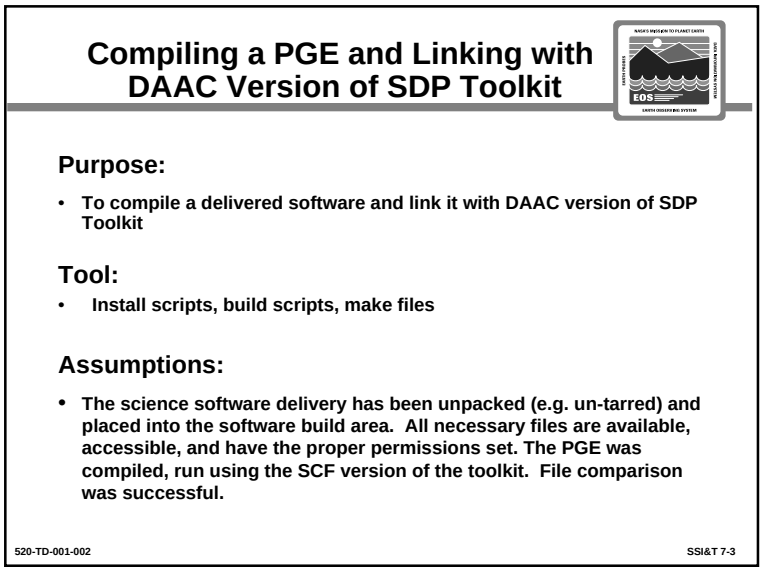
Discussion Topics

This is what we've done so far:

- checked in the PGE element into ClearCase
- checked the code for standards compliance
- checked the code for prohibited functions
- compiled and ran using the SCF version of the SDP Toolkit
- compared output to the one provided by the SCF

Everything checks out as expected!!! We are on the way to making the PGE a part of the production system.

In this lesson we'll compile the PGE using the DAAC version of the SDP toolkit and register the PGE into PDPS



Discussion Topics

Purpose: To compile delivered science software and link it with the DAAC version of the SDP Toolkit.

Tools/Materials/Assumptions: The science software was previously built successfully using the SCF version of the SDP Toolkit.

If this is not the case, then the science software delivery has been unpacked (e.g. un-tarred) and placed into the software build area. All files necessary to build the science software are available, accessible, and have the proper permissions set. This includes any install scripts, build scripts, make files, and instructions for using them. The build process will be done on the SGI Power Challenge in a Unix shell (that is, outside of CASEvision or other COTS environments).

There may be six versions of the SDP DAAC Toolkit:

IRIX 5.3 (old) 32-bit mode, with FORTRAN 77 | IRIX 5.3 (old) 32-bit mode, with Fortran 90

IRIX 6.X (new) 32-bit mode, with FORTRAN 77 | IRIX 6.X (new) 32-bit mode, with Fortran 90

IRIX 6.X 64-bit mode, with FORTRAN 77 | IRIX 6.X 64-bit mode, with Fortran 90

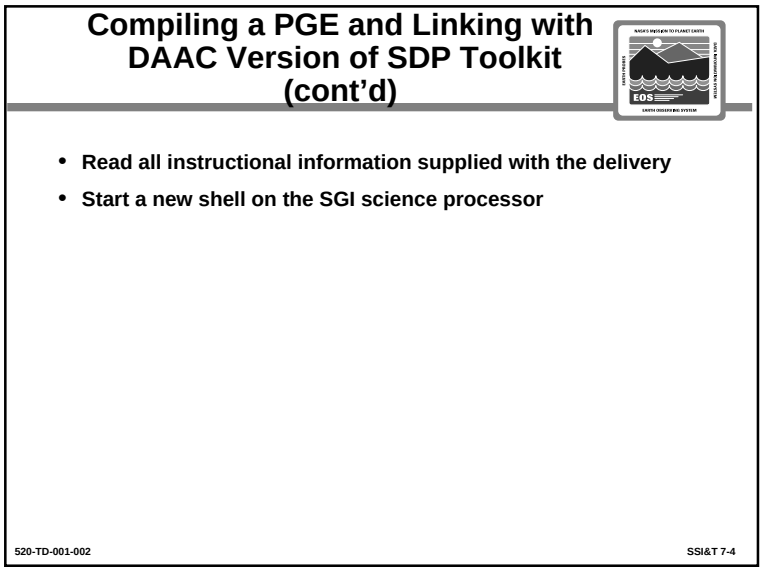
The 64-bit mode versions of the SDP Toolkit are not fully functional and its use may be policy dependent.

References: SDP Toolkit User's Guide

Delivered System Description Document and Operations Manual from Instrument Team

NOTE: The compiling and linking of science software (building) will vary according to the particular delivery. The instructions supplied with the delivery should be the primary source of information. What follows below are some "typical" steps that may or may not be applicable to a particular situation.

Most of the following steps will be unnecessary if the science software had been previously built successfully with the SCF versions of the SDP Toolkit.



Discussion Topics

Step 1. Read all instructional information supplied with the delivery.

Such material should be the primary source of information on how to build science software.

NOTE: This step may not be necessary if the software had been previously built successfully with the SCF version of the SDP Toolkit.

- Use any appropriate viewer or editor desired.
  - – ASCII (text) files may be viewed with more or through vi.
  - – PostScript documents may be viewed through ghostview and
  - – PDF documents may be viewed through Acrobat Reader (both accessible via the SSIT Manager).
  - – Documents in Microsoft Word and related formats may be viewed through Microsoft Word (available via the SSIT Manager).

Step 2. Start a new shell on the SGI science processor within which to build the software.

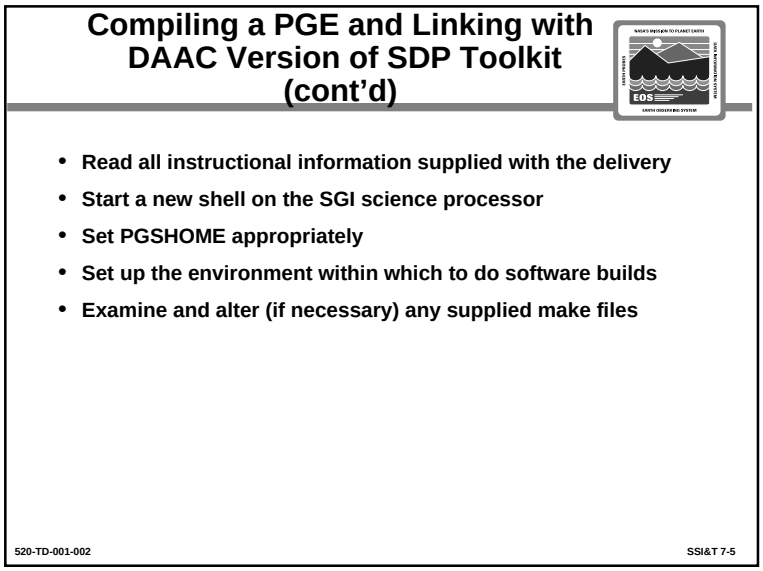
Either:

- From the SSIT Manager GUI, choose the Tools menu.
- Then choose Xterm.
- Then telnet into the SGI.

or

- In any currently available Xterm window, spawn a new Xterm session with: xterm &
- Then telnet into the SGI.

NOTE: Starting a new shell avoids potential problems associated with redefinitions of environment variables.



Discussion Topics

Step 3. Set PGSHOME appropriately.

- Enter setenv PGSHOME pathname

  where pathname is the home directory of the appropriate DAAC version of the SDP Toolkit. There may be multiple versions of the DAAC version of the SDP Toolkit depending on the mode the software is built in (old 32-bit, new 32 -bit, or 64-bit) and on the whether the software includes FORTRAN 77 or Fortran 90.

NOTE: Make sure that PGSHOME points to the correct DAAC version.

Step 4. Set up the environment within which to do software builds. Source the appropriate pgs-dev-env.csh or pgs-dev-env.ksh file:

- source $PGSBIN/pgs-dev-env.csh or
- source $PGSBIN/pgs-dev-env.ksh

NOTE: The environment variable PGSHOME must be set first.

The choice of .csh or .ksh depends on your current shell. Use the .csh file if you are running C shell, .ksh if you are running Korn shell.

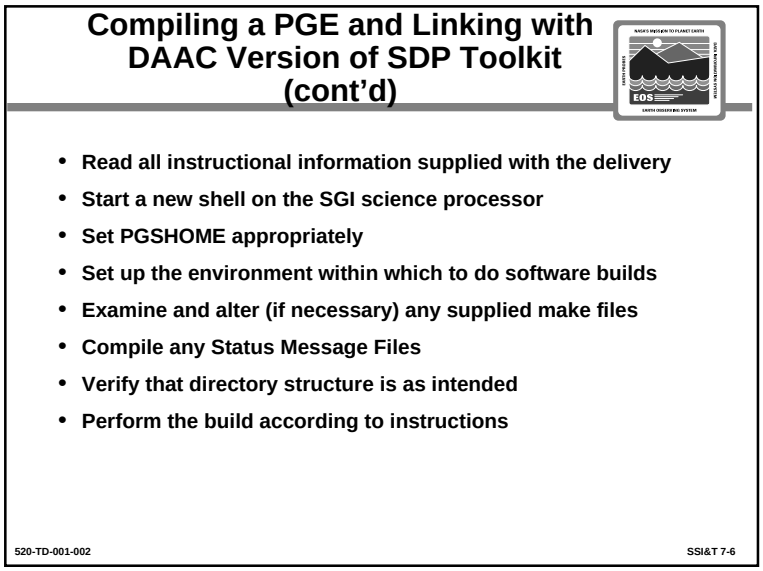
If you don't know, within the xterm window enter, echo $SHELL

Step 5. Examine and alter (if necessary) any supplied make files.

NOTE: This step may not be necessary if the software had been previously built successfully with the SCF version of the SDP Toolkit.

Invoke favorite text editor (vi, emacs, xedit, etc.)

- Check that compiler, compiler flag settings and other environment variable settings are appropriate. Try to use the same settings as the SDP Toolkit.
- Assuming step 4 was done, use the command env to list current settings of the shell's environment variables.



Discussion Topics

NOTE: The delivery may include several versions of make files appropriate to different platforms. Refer to supplied documentation.

The delivery may include install scripts which set environment variables.

Try to make use of environment variables used by the shell (e.g. F77, C, CFLAGS) rather than setting them within the make/build files.

Step 6. Compile any Status Message Files

NOTE: This step may not be necessary if the software had been previously built successfully with the SCF version of the SDP Toolkit.

- Run smfcompile.
- Move the text message files into the $PGSMSG directory.
- Move the include files into the directory expected by the build/make files.

See section on Compiling System Message Files (SMFs) for details on how to do this.

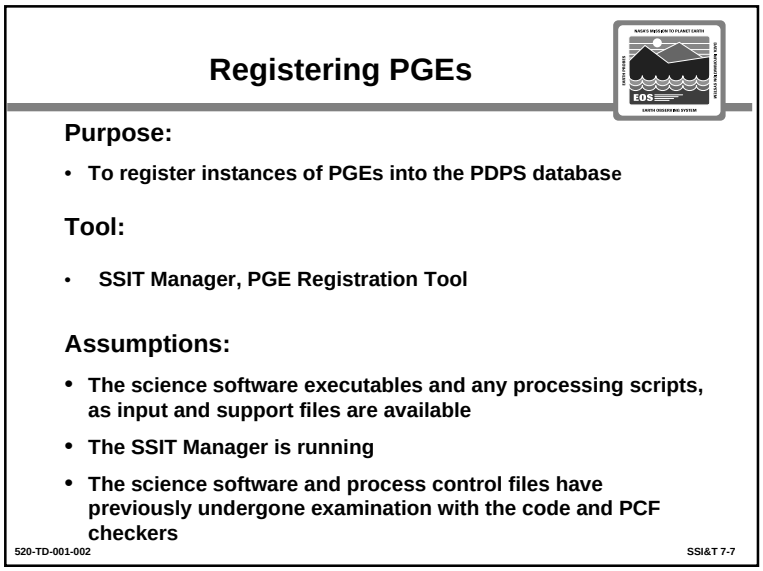
Step 7. Verify that directory structure is as intended.

NOTE: This step may not be necessary if the software had been previously built successfully with the SCF version of the SDP Toolkit.

NOTE: Deliveries may come with install scripts which place files into various directories according to some structure.

Step 8. Once installation scripts, make files and build scripts are setup properly, perform the build according to instructions.

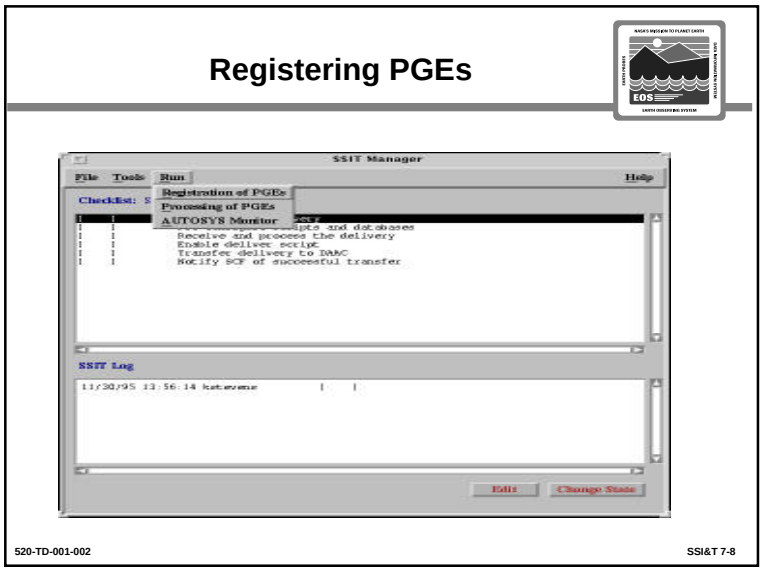
NOTE: Science software deliveries may come with a single, top-level script to do the entire build or the build process could involve a series of steps, each of which should be described fully in the delivered documentation.



Discussion Topics

Purpose: To register instances of PGEs into the PDPS database.

Assumptions: The science software executables and any processing scripts, as input and support files are available on an auto-mounted location that can be accessed from both the Sun and SGI machines. The SSI&T Manager GUI is running in a window initiated from the Sun machine. The science software and process control files have previously undergone examination with the code and PCF checkers.



Discussion Topics

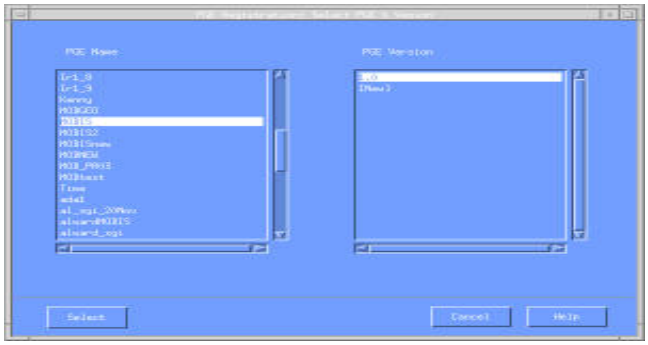
Bring up GUI for selection of PGE name and PGE version to be registered.

- Select the Run menu from the SSIT Manager GUI.
- Choose the ‘Registration of PGEs’ option.

  This will spawn an Xterm window labeled ‘PGE Registration’

Registering PGEs (cont'd)

- **PGE Registration Screen**



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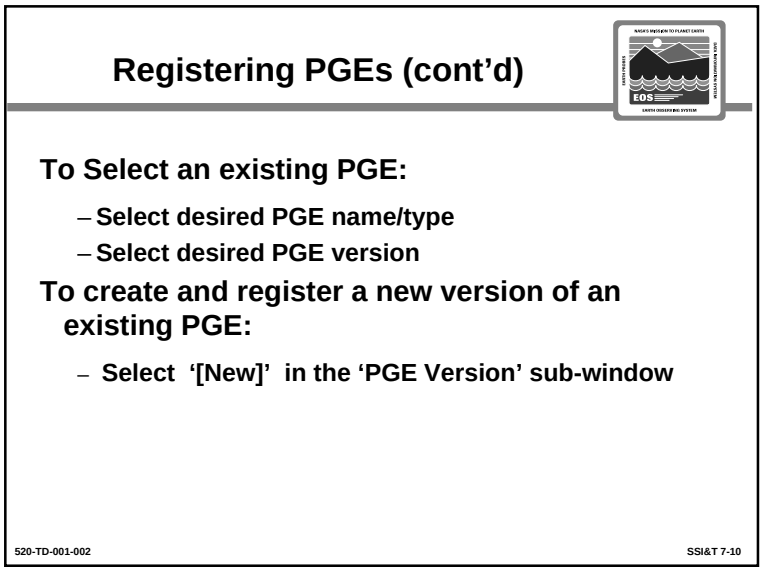
Discussion Topics



Discussion Topics

Step 1. Select desired PGE name/type.

- Choose desired PGE by clicking on one of the options listed in the 'PGE Name' sub-window

NOTE: scroll as necessary to view all PGE types for which versions have currently been registered.If the desired PGE has not yet been registered, click on the '[New]' selection in the 'PGE Name' sub-window. The 'PGE Version' sub-window at right will be blank until a PGE name has been selected.

Step 2. Select desired PGE version.

- Choose desired PGE version by clicking on one of the options listed in the 'PGE Version' sub-window

NOTE: Scroll as necessary to view all PGE versions which have currently been registered for the selected PGE name.

Step 3. To create and register a new version of the selected PGE name, click on the '[New]' selection in the 'PGE Version' sub-window.

Step 4. Commit selections of PGE name and PGE version, and bring up the next xterm window for selecting the Process Control File template that is to be used as the basis for the registration of this PGE version.

- Click on the Select button in the lower left of the 'PGE Registration: Select PGE & Version' window.

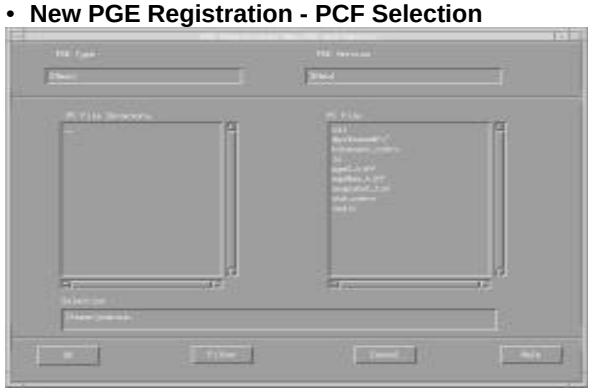
NOTE: If a New PGE Name and/or Version number has been selected, clicking on Select will spawn an xterm window labeled 'PGE Registration: New PGE and Version.'

If an existing, previously registered PGE Version has been selected (presumably as the basis for parameter modifications), clicking on Select will spawn the xterm labeled 'PGE'

The parent xterm window labeled 'PGE Registration: Select PGE & Version' will still exist in the background after the Xterm window labeled 'PGE Registration: New PGE and Version' has been initiated.

Registering PGEs (cont'd)
New PGE - PCF Selection

- **New PGE Registration - PCF Selection**



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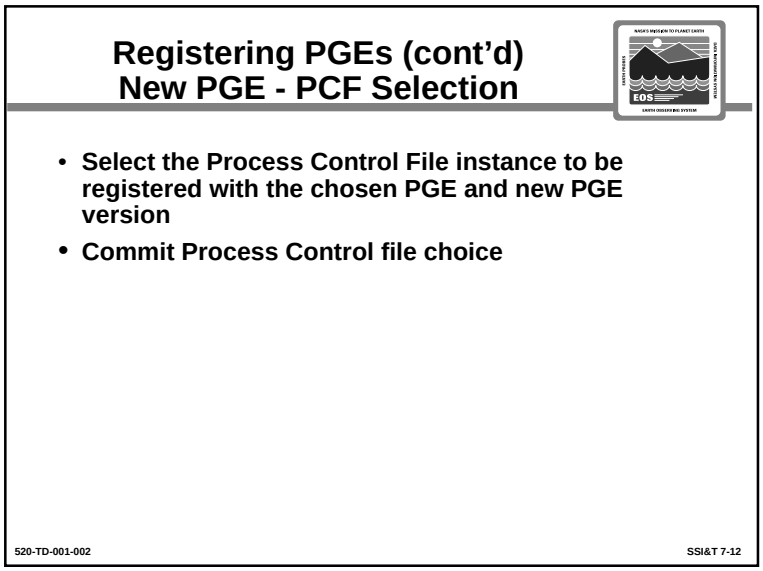
Discussion Topics



Discussion Topics

Step 1: If a new PGE Name and/or Version is being registered, select the Process Control File instance that is to be registered with the chosen PGE and new PGE version.

- The path and file name of the desired Process Control file may be selected in the Xterm labeled 'PGE Registration: New PGE and Version' by

  – clicking on entries in the 'PC File Directory' and 'PC File' sub-windows,

  and/or

  – typing in a path or path and file name into the 'Selection' sub-window and clicking on the Filter button.

Note: Using either of these methods causes the contents of the 'PC File Directory' and 'PC File' sub-windows to be updated.

Note that the sub-window labeled 'PGE Type' in this Xterm window has the same contents as the 'PGE Name' sub-window in the previous, parent GUI screen.

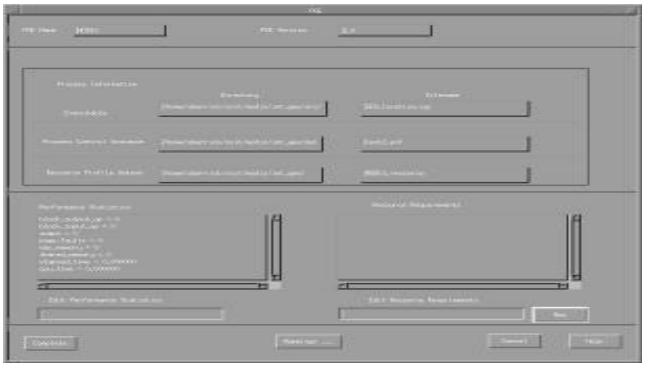
If either of the 'PGE Type' or 'PGE Version' sub-window fields contain the value '[New]', the sub-window '[New]' value(s) must be changed to a user-defined string before clicking on the OK button.

Step 2: Commit Process Control file choice and bring up next Xterm window displaying existing information in the PDPS database regarding this PGE name and version.

- Click on the OK button in the Xterm labeled 'PGE Registration: New PGE and Version'.

  This will spawn an Xterm window labeled 'PGE'.

Registering PGEs (cont'd)
Paths/Performance Statistics



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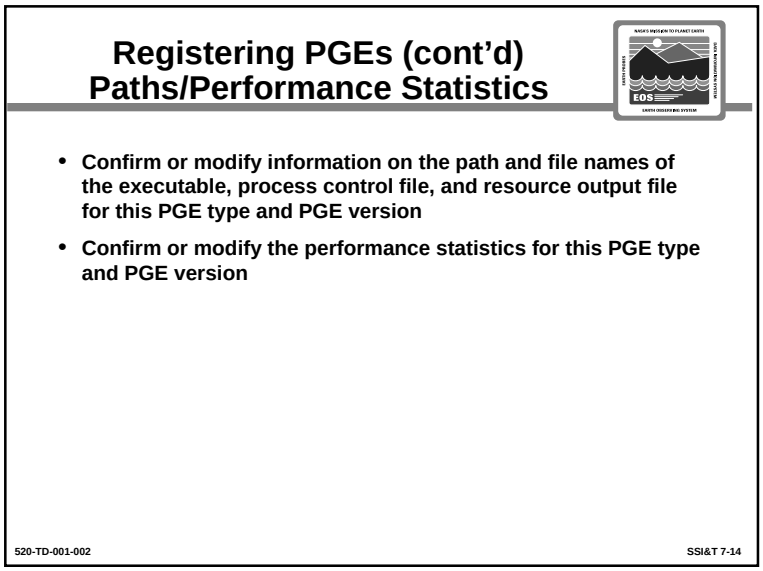
Discussion Topics



Discussion Topics

Step 1: Confirm or modify information on the path and file names of the executable, process control file, and resource output file for this PGE type and PGE version.

Note: If this is a new PGE version, all the fields of the 'Directory' and 'Filename' sub-windows for the PGE Executable, Process Control Instance and Resource Profile Output entries will have the value 'NONE'. The values are 'NONE' since the PDPS database contains no data yet for this PGE version.

If the user is modifying information from an existing (i.e. registered) PGE version, the previously registered information is presented in the 'Directory' and 'Filename' sub-windows.

Entering or modifying the executable, process control file or resource profile output file to be used for this PGE version is performed by editing the contents of the 'Directory' and 'Filename' sub-windows.

Path names selected must correspond to directories that are on volumes that have been auto-mounted between the Sun and SGI machines (i.e. a directory that can be seen and accessed on both the Sun and the SGI).

Although this GUI requires entries in the sub-windows for path and filename for the Resource Profile Output file, this file does not exist until the Data Processing Request has been submitted and the PGE has executed.

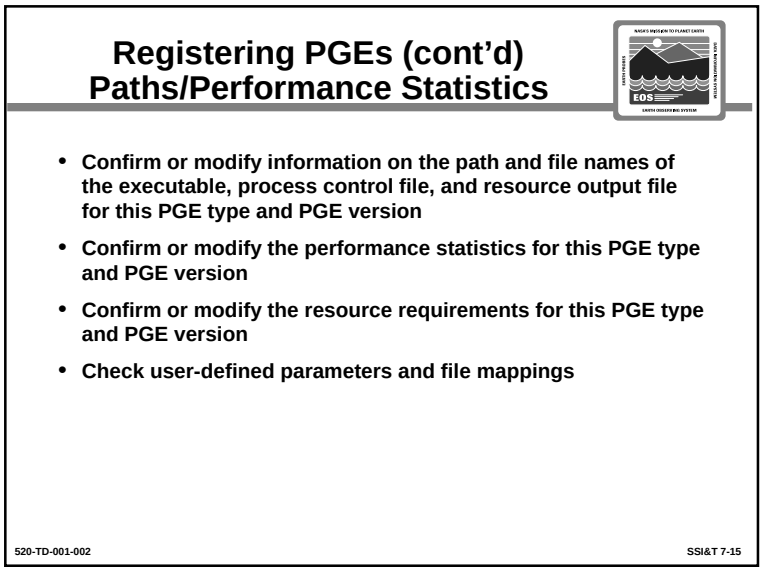
This file will contain profile information from the PGE run.

Step 2: Confirm or modify the performance statistics for this PGE type and PGE

version.

Note: To change a value of one the eight parameters in the 'Performance Statistics' sub-window , click on the entry for the parameter. This brings the parameter and its value into the 'Edit Performance Statistics' sub-window.

Modifying the parameter values causes the corresponding database entries to be changed when the PGE version is registered.



Discussion Topics

Note: Any modifications to the fields in the 'Performance Statistics' sub-window are stored in database entries with the registered PGE; however, the PDPS does not use these statistics at this time.

Step 3: Confirm or modify the resource requirements for this PGE type and PGE version.

- Creating new Resource Requirements is performed by Clicking on the New button at the right of the 'Edit Resource Requirements' sub-window, entering the new requirement within the sub-window and then hitting return to add it.
- Modifying existing Resource Requirements is performed by clicking on the Resource Requirement entry, modifying it within the 'Edit Resource Requirements' sub-window, and then hitting return.

Note: Any new or modified fields in the 'Resource Requirements' sub-window are stored in database entries with the registered PGE; however, the PDPS does not use these requirements at this time.

The items in the 'Resource Requirements' sub-window are user-configurable. They are stored in the database in Parameter equal Value (PeV) form. The Resource Requirement entry must be comprised of three items:

a) resource type string (maximum 36 characters)

b) resource operator, such as =, <, or >= (maximum 2 characters)

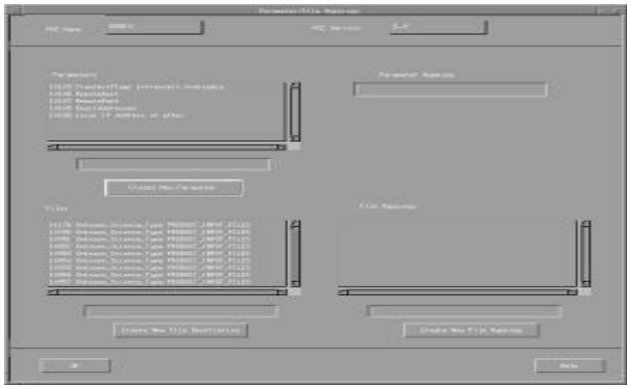
c) resource value string (maximum 36 characters)

Step 4: Bring up the GUI for this PGE's user-defined parameter and file mappings.

- From the Xterm labeled 'PGE', click on the Mappings button.

  This will spawn an Xterm labeled 'Parameter/File Mappings' .

Registering PGEs (cont'd)
Parameters and File Mappings



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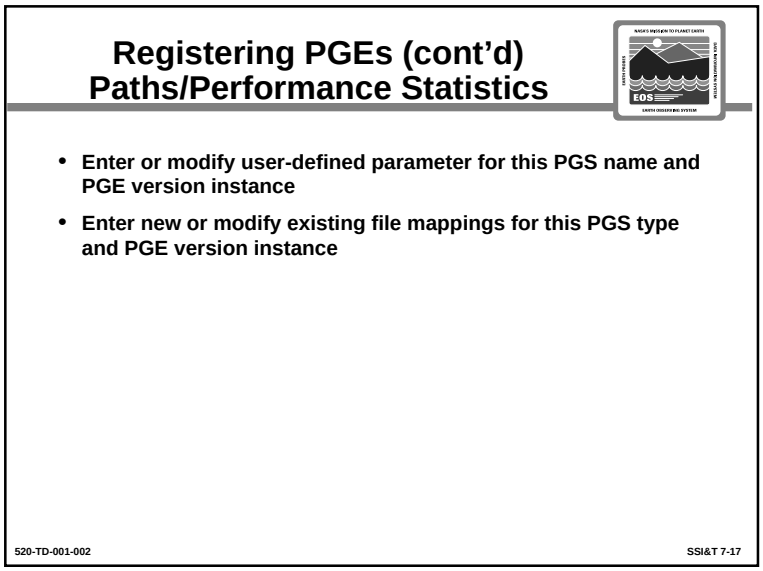
Discussion Topics



Discussion Topics

Step 1: Enter or modify user-defined parameter for this PGS name and PGE version instance.

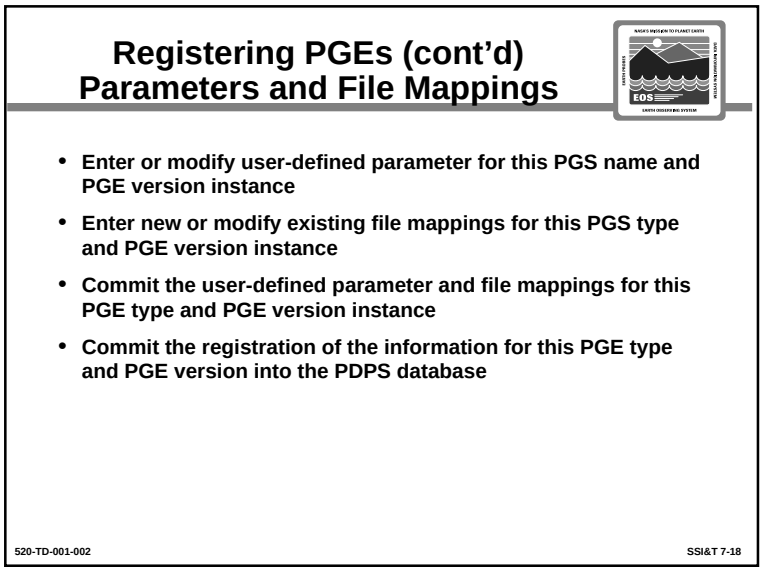
Note: Creating new user-defined parameters is performed by clicking on the Create New Parameter button below the 'Parameters' sub-window, entering the parameter's logical ID, the parameter's name in the sub-window above the Create New Parameter button. Then enter the parameter's value in the sub-window at right which is labeled 'Parameter Mapping'. Hit return to add it.

Modifying existing user-defined parameters is performed by clicking on 'Parameters' sub-window entry. This places the parameter's logical ID and description in the sub-window bove the Create New Parameter button where the values can be edited. The parameter's value appears in the sub-window at right which is labeled 'Parameter Mapping' where it can then be edited. Hit return to add your modification.

Step 2: Enter new or modify existing file mappings for this PGS type and PGE version instance that were originally set by the specified process control file.

Note: Creating new file mappings is performed by clicking on the Create New File description button below the 'Files' sub-window, entering the file's logical ID, science type and Toolkit data type in the sub-window above the Create New File Description button. Then enter the file and its directory path in the sub-window at right which is labeled 'File Mappings'. Hit return to add it.

Modifying existing file mappings is performed by clicking on 'Files' sub-window entry. This places the file's logical ID, science type and Toolkit data type in the sub-window above the Create New File Description button where the values can be edited. The file name and directory path appear in the sub-window at right which is labeled 'File Mappings' where it can then be edited. Hit return to add your modification.



Discussion Topics

Note: Generating multiple file mappings for a single entry in the 'File' sub-window (i.e. a unique logical ID) is performed by clicking on the Create New File Mapping button below the 'File Mappings' sub-window. Enter the new directory path and file name. . Hit return to add the file mapping.

Multiple file mappings per file entry are possible because a given file logical ID can have more than one file version (i.e. mapping) associated with it. Multiple file versions per logical file ID are distinguished in the PDPS by a file sequence number database field.

The template PCF may already contain multiple file mappings for a given file

logical ID. In such cases, the PCF file mapping entries must contain unique sequence number values.

Step 3: Commit the user-defined parameter and file mappings for this PGE type and PGE version instance.

- Click on the OK button in the lower left of the Xterm labeled 'PGE'.

  The Xterm labeled 'PGE' will automatically be closed when the OK button has been selected.

Step 4: Commit the registration of the information for this PGE type and PGE version into the PDPS database, or cancel thePGE registration.

- Click on the Complete button at the lower left of the Xterm window labeled 'PGE' to register the information for this PGE type and PGE version.

or

- Click on the Cancel button at the lower right of the Xterm window labeled 'PGE' to cancel this PGE registration.